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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,374	09/26/2003	Andy Aaron	N0484.70760US00	8515
23628 7590 08/30/2011 WOLF GREENFIELD & SACKS, P.C. 600 ATLANTIC AVENUE BOSTON, MA 02210-2206				
EXAMINER				
ARMSTRONG, ANGELA A				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/672,374

**Applicant(s)**

AARON ET AL.

**Examiner**

ANGELA A. ARMSTRONG

**Art Unit**

2626

**Period for Reply** -- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 5) ☒ Claim(s) 1,4,5,7-11,14,15,17-23 and 29-35 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1,4,5,7-11,14,15,17-23 and 29-35 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-856)  
Paper No(s)/Mail Date \_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 24, 2010 has been entered.

***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 4-5, 7-10, 21-23, 29-30, 33, and 35 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1, 4-5, 7-10, 29-30, and 33 are directed to a program storage device readable by a machine without being limited to non-transitory storage. The specification is non-limiting with regards to the storage device, because the specification provides only particular examples of a storage device without specifically excluding transitory mediums. Accordingly, the claimed invention fails to be limited to only statutory embodiments, and is rejected under 35 U.S.C. 101. This rejection under 35 USC 101 can be overcome by specifically limiting the claimed storage medium to be directed to only non-transitory storage media.

Claims 21-23 and 35 are directed to a text-to-speech system. However, the claims fail to recite any physical hardware or elements of an actual system. Accordingly, the system claims

covers both statutory and non-statutory embodiments. Additionally, the specification discloses the systems may be implemented in various forms of hardware, software, firmware, special purpose processors or a combination. Given a broadest reasonable interpretation, the claims can be directed to a computer program. A computer program does not fall within one of the four eligible statutory category of invention under 35 U.S.C. 101. Accordingly, the claims are not eligible for patent protection and are rejected under 35 U.S.C. 101.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 4-5, 7, 10-11, 14-15, 17, and 20-23, are rejected under 35 U.S.C. 102b) as being anticipated by Eide (US Patent No. 6,104,470). Eide discloses methods for generating pitch and duration contours in a text to speech system. Regarding claims 1, 11, and 21, Eide teaches machines, systems and methods for generating text --to--speech (col. 2, line 64 to col. 3, line 34), including extracting prosodic parameter values from an audio signal corresponding to a pronunciation of a text string by a user (col. 6, line 24 to col. 7, line 4 -- calculates pitch contours and stress contours --- and implements a prosody analyzer via the prosody generator (104)); extracting duration parameter values from the audio signal by aligning the audio signal with the text string (col. 6, lines 24-35; col. 7, lines 18-24 -- the invention finds the time occurrence of

each phoneme and vowel as well as the end time of each vowel); adopting as synthesis parameter values the prosodic parameter values and duration parameter values extracted from the audio signal (col. 6, line 64 to col. 7, line 4; col. 7, lines 33-39; Figure 5); and generating a synthetic speech waveform using the synthesis parameter values (col. 6, line 64 to col. 7, line 4; col. 7, lines 33-39; Figure 5 – and implements a TTS engine via the concatenative processor (108)).

Regarding claims 4 and 14, Eide teaches segmenting the audio signal into time-segmented regions, wherein each time-segmented region is mapped to a corresponding phoneme (col. 3, lines 38-43).

Regarding claims 5 and 15, Eide teaches the alignment is performed using a Viterbi alignment process (col. 6, lines 24-35).

Regarding claims 7 and 17, Eide teaches specifying at least one portion of the synthesis parameter values as attribute values for mark-up elements (col. 7, lines 14-28; col. 7, line 66 to col. 8, line 20).

Regarding claims 10, 20, and 23, Eide teaches processing content of the audio signal to generate the synthetic speech waveform having a desired pronunciation (Figure 3 – pitch model to generate male or female voices – col. 5, lines 54-64; col. 11, lines 15-39).

Regarding claim 22, Eide teaches a user interface that enables a user to input the audio signal (304) and the input text string corresponding to the audio signal (112).

***Claim Rejections – 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eide in view of Henton (US Patent No. 5,860,064).

Regarding claims 8 and 18, Eide does not specifically teach generating a high-level markup of the text string. However, generating a high-level markup a text string was well known. Henton teaches a method and apparatus for automatic generation of vocal emotion in a synthetic text-to-speech system, including selecting a portion of text, selecting a vocal emotion to be applied to the text, obtaining vocal emotion parameters associated with the selected vocal emotion, and applying the obtained vocal emotion parameters to the selected text (generating the marked up text portion) to be output by the text-to-speech system (Figures 3-4; col. 7, line 60 to col. 9, line 11). Henton specifically teaches the invention is advantageous in providing vocal emotion sound qualities to synthetic speech (col. 1, lines 24-31). It would have been obvious to one of ordinary skill at the time of the invention to modify the system of Eide with the teachings of Henton, for the purpose of generating high-level mark-up text to provide vocal emotion in the generated synthetic speech.

5. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eide in view of Applicant's Admitted Prior Art (AAPA).

Regarding claims 9 and 19, Eide does not specifically teach the formatted text is generated using SSML (speech synthesis markup language). AAPA specifically indicates implementation of SSML for use on the Internet was known. It would have been obvious to one of ordinary skill at the time of the invention to implement S SML in the system of Eide, for the purpose of providing high quality synthetic speech for use with Internet applications and resources.

6. Claims 29-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eide in view of Saon et al, "Maximum Likelihood Discriminant Feature Spaces," 2000, IEEE International Conference on Acoustics, Speech, and Signal Processing, Volume 2, 5-9 June 2000, pages 1129-1132.

Regarding claims 29-35, Eide teaches everything as claimed in claims 1, 11, and 21. Eide does not disclose all the details for extracting acoustic information from the audio signal to include transforming the digitized input waveforms into a set of feature vectors on a frame-by-frame basis by producing a multi-dimensional cepstra feature vector for a predetermined intervals of the spoken audio signal, concatenating frames to the left and to the right of a current frame to augment a current cepstral vector, and reducing the dimension of each augmented cepstral vector using linear discriminant analysis. However, extracting cepstra features, splicing

the frames and using linear discriminant analysis for dimensionality reduction was well known in speech and signal processing so as to obtain the best quality features generated with minimal loss in discrimination when the vectors dimensionality is reduced. Saon discloses a speech processing application which extracts acoustic information from voicemail messages which processes the audio signals to produce feature vectors of cepstral, delta and delta-delta coefficients from 9 consecutive frames, where the 9 consecutive 24-dimensional vectors were spliced together to form 216-dimensional feature vectors, which are subsequently reduced by applying the LDA. It would have been obvious to one of ordinary skill at the time of the invention to modify the system of Eide to implement extracting acoustic features from the audio signal and producing cepstra feature vectors, as was well known in the art, for the purpose of generating quality coefficients to be used in the system processing so as to ensure the best quality speech is synthesized.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANGELA A. ARMSTRONG whose telephone number is (571)272-7598. The examiner can normally be reached on Monday-Thursday 11:30-8:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Wozniak can be reached on 571-272-7632. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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